

CLAIMS

1. A method for producing a water-developable photopolymer plate for letterpress printing comprising an exposure step, a development step and a post-exposure step, wherein the photopolymer plate is brought into contact with a liquid comprising a modified silicone compound and/or a modified fluorine compound during or after the exposure step.

2. The method according to claim 1, wherein the photopolymer comprises:

a binder polymer comprising a polar group-containing polymer and a hydrophobic polymer;

an ethylenically unsaturated compound; and
a photopolymerization initiator.

3. The method according to claim 1 or 2, wherein the modified silicone compound and/or the modified fluorine compound comprises one or more modifying groups selected from the group consisting of a hydroxy group, a carbinol group, an epoxy group, a (meth)acrylate group, a carboxyl group, a carboxylate group, an amino group, an aromatic hydrocarbon group inclusive of a phenyl group, a hydrocarbon group substituted with an aromatic hydrocarbon inclusive of a methylstyryl group, an aromatic hydrocarbon group substituted with a hydroxy group inclusive of a hydroxyphenyl group, an alkoxy group, a (poly)ether group and a urethane group.

4. The method according to any one of claims 1

to 3, wherein an irradiation with actinic light is carried out after the photopolymer plate is brought into contact with the liquid comprising the modified silicone compound and/or the modified fluorine compound.

5. The method according to claim 4, wherein the photopolymer plate is brought into contact with the liquid comprising the modified silicone compound and/or the modified fluorine compound after the development step and immediately before the post-exposure step.

6. The method according to claim 4 or 5, wherein development is carried out by using a developer comprising the modified silicone compound and/or the modified fluorine compound.

7. The method according to claim 6, wherein the modified silicone compound is a silicone compound comprising one or more modifying groups selected from the group consisting of a hydroxy group, a carbinol group, an epoxy group, a (meth)acrylate group, a carboxyl group, a carboxylate group, an amino group and a (poly)ether group.

8. The method according to any one of claims 1 to 3, wherein the post-exposure step is carried out while the photopolymer plate is being brought into contact with the liquid comprising the modified silicone compound and/or the modified fluorine compound.

9. The method according to claim 1, wherein the

liquid comprising the modified silicone compound and/or the modified fluorine compound is a developer.

10. A developer, comprising a modified silicone compound and/or a modified fluorine compound, for use in producing a water-developable photopolymer plate for letterpress printing.

11. The developer according to claim 10, comprising:

(a) 1 to 50 parts by weight of one or more surfactants;

(b) 0.01 to 20 parts by weight of the modified silicone compound;

(c) 0.2 to 20 parts by weight of an alkyl glycol ether; and

(d) 0.1 to 10 parts by weight of an alkali builder.

12. The developer according to claim 10 or 11, wherein the modified silicone compound is a silicone compound comprising one or more modifying groups selected from the group consisting of a hydroxy group, a carbinol group, an epoxy group, a (meth)acrylate group, a carboxyl group, a carboxylate group, an amino group and a (poly)ether group.

13. A water-developable photopolymer plate for letterpress printing produced by the method according to any one of claims 1 to 9.

14. A water-developable photopolymer plate for letterpress printing, comprising silicon on a surface

thereof in a relative element concentration of 0.1 at% or more.

15. The water-developable photopolymer plate for letterpress printing according to claim 13 or 14, wherein a rate of a change of a diameter of an indicator of surface wettability between before and after a treatment by using a 20/80 (weight ratio) ethyl acetate/isopropyl alcohol mixed solvent is 25% or less.

16. The water-developable photopolymer plate for letterpress printing according to claim 13 or 14, comprising silicon on the surface of the polymer in a relative element concentration of 0.1 at% or more after the treatment by using the 20/80 (weight ratio) ethyl acetate/isopropyl alcohol mixed solvent.